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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/935,789

08/22/2001

Francky Catthoor

IMEC218.001AUS

9039

20995

7590

02/13/2004

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EXAMINER

THOMPSON, ANNETTE M

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 02/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

K.D.

# Office Action Summary

Application No.

09/935,789

Applicant(s)

CATTHOOR ET AL.

Examiner

A. M. Thompson

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-14 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/01-22-02
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This application 09/935,789 has been examined. Claims 1-14 are pending.

#### ***Drawings***

1. The drawings are objected to because 1) the lettering is too small and difficult to read and 2) the flowchart writing must fit within the boxes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Claim Objections***

2. Claims 1, 2, 7, 10-13 (and claims dependent therefrom) are objected to because of the following informalities: Pursuant to claims 1, 2, 11, and 13, Applicants must further define or clarify the term "Pareto-like". Although Applicants liberally use this term in the specification, the specification does not disclose what "Pareto-like" means. Pursuant to claims 7 and 12 modify "two of the tasks" to - -two tasks of the plurality of tasks- -. Additionally, pursuant to claim 1, at line 3, change "a digital" to - -the digital- -. Pursuant to claim 10, at line 2 insert a hyphen between "multi" and "supply". Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 11-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Pursuant to claims 1, 2 and 11-14, these claims recite the limitation of "Pareto-like" task. However, it is unclear what aspects of the Pareto curve behavior is being referenced and the specification does not further clarify; in fact, the specification merely uses this term wholesale without elucidating what is meant by "Pareto-like".

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

**Rejection of claims 1-5 and 7-10**

6. Claims 1-5 and 7-10 are rejected under 35 U.S.C. 102(a) as being anticipated by the Francky Catthoor et al. paper (the Catthoor paper) entitled Proposal for Unified System Design Meta Flow In Task-Level and Instruction-Level Design Technology Research for Multi-Media Applications.

7. Pursuant to claim 1 which recites a method of designing an essentially digital system, the method comprising generating a system-level description of the functionality and timing of a digital system, the system-level description comprising a plurality of tasks; optimizing task concurrency in the system-level description, thereby obtaining a task concurrency optimized system-level description that includes Pareto-like optimization information; and designing the essentially digital system based at least in

part upon the task concurrency optimized system-level description (Figure 2, and § 2.1 discloses the limitations of this claim).

8. Pursuant to claim 2, wherein the task concurrency optimized system-level description further includes a description of a real time operating system that uses Pareto-like task optimization information (§ 2.3 and Figure 3).

9. Pursuant to claim 3, which recites a method of designing an essentially digital system, the method comprising generating a description of the functionality and timing of the digital system, wherein the description includes a grey-box system-level description comprising a plurality of tasks; optimizing task concurrency in the system-level description, thereby obtaining a task concurrency optimized grey-box system-level description; and designing the essentially digital system based at least in part upon the task concurrency optimized grey-box (Figure 2, Tasks 1-3 illustrates grey-box elements) system-level description (Figure 2, and § 2.1 discloses the limitations of this claim).

10. Pursuant to claim 4, wherein the task concurrency optimized system-level description further includes a description of a real-time operating system (§ 2.3 and Figure 3).

11. Pursuant to claim 5, wherein optimizing task concurrency comprises separately performing design-time intra-task scheduling for at least two of the tasks, thereby generating a plurality of intra-task schedules for each of the tasks (§ 3).

12. Pursuant to claim 7, wherein optimizing task concurrency comprises designing a run-time scheduler that is part of the real-time operating system, wherein the run-time

scheduler is capable of dynamically scheduling at least two tasks (§ 2.3, task and thread scheduling).

13. Pursuant to claim 8, wherein non-deterministic behavior of the digital system is modeled by interacting the tasks, while each of the tasks describe part of the deterministic behavior of the digital system (Figure 2 illustrates the deterministic behavior).

14. Pursuant to claim 9, wherein the digital system comprises a plurality of processors, and wherein the design time intra-task scheduling uses processor power consumption optimization information to assign at least one of the tasks to at least one of the processors (§ 3; see also Figure 6).

15. Pursuant to claim 10, wherein at least one processor is a multi-supply voltage processor (§ 2.3, see also § 3).

***Allowable Subject Matter***

16. Claims 6, 11-14 contain allowable subject matter.

17. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. Claims 11 and 13 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

19. Claims 12 and 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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20. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not disclose or suggest that intra-task schedules are subsets of all intra-task schedules wherein the subset includes Pareto optimal schedules.

**Conclusion**

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please reference the PTO-892 for a complete listing.

22. Any inquiry concerning this communication or earlier communications should be directed to Examiner A.M. Thompson whose telephone number is (571) 272-1909. The Examiner can usually be reached Monday thru Friday from 8:00 a.m. to 4:30 p.m.. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matthew S. Smith, can be reached on (571) 272-1907.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562 or the Customer Service Center whose telephone number is (571) 272-1750.

23. Responses to this action should be mailed to the appropriate mail stop:

Mail Stop \_\_\_\_\_  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306, (for all **OFFICIAL** communications intended for entry)

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